Fig.1

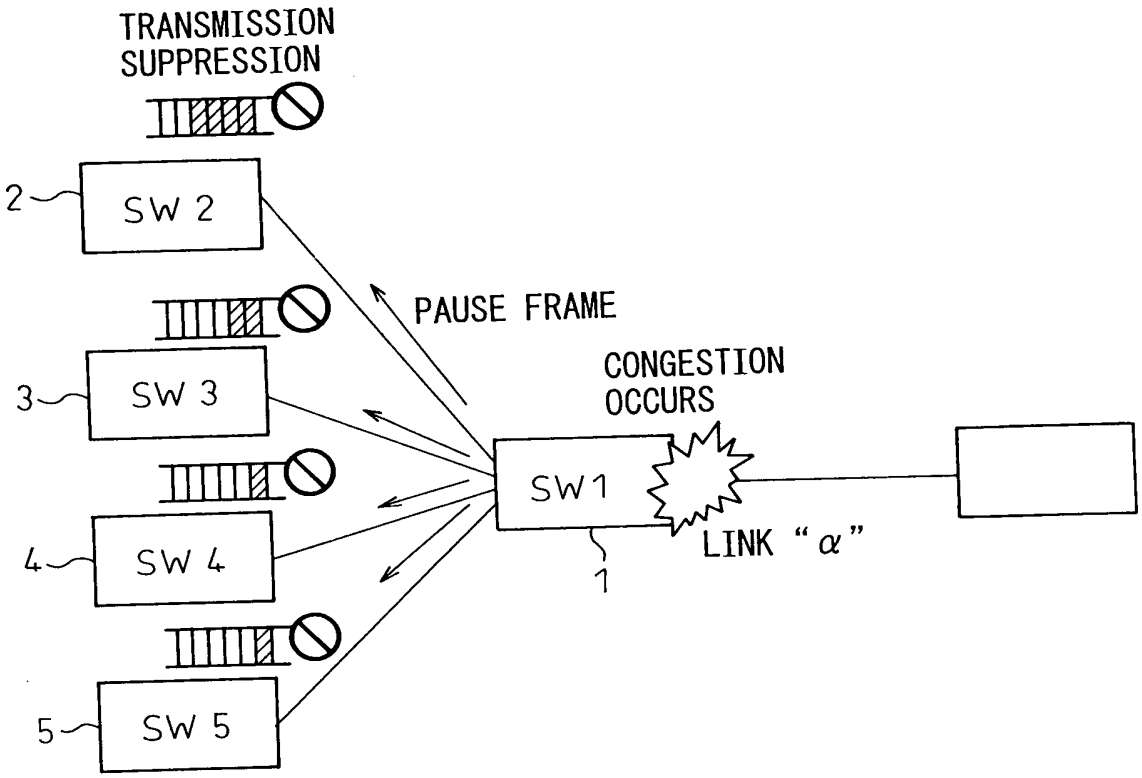
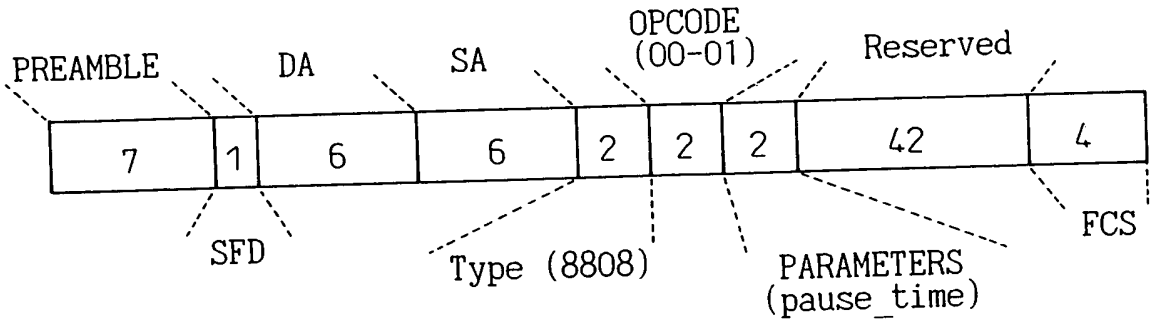


Fig.2



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DA:01:80:C2:00:00:01 (multicast)
OPc:0x0001
Parameter:0~65535

Fig.3

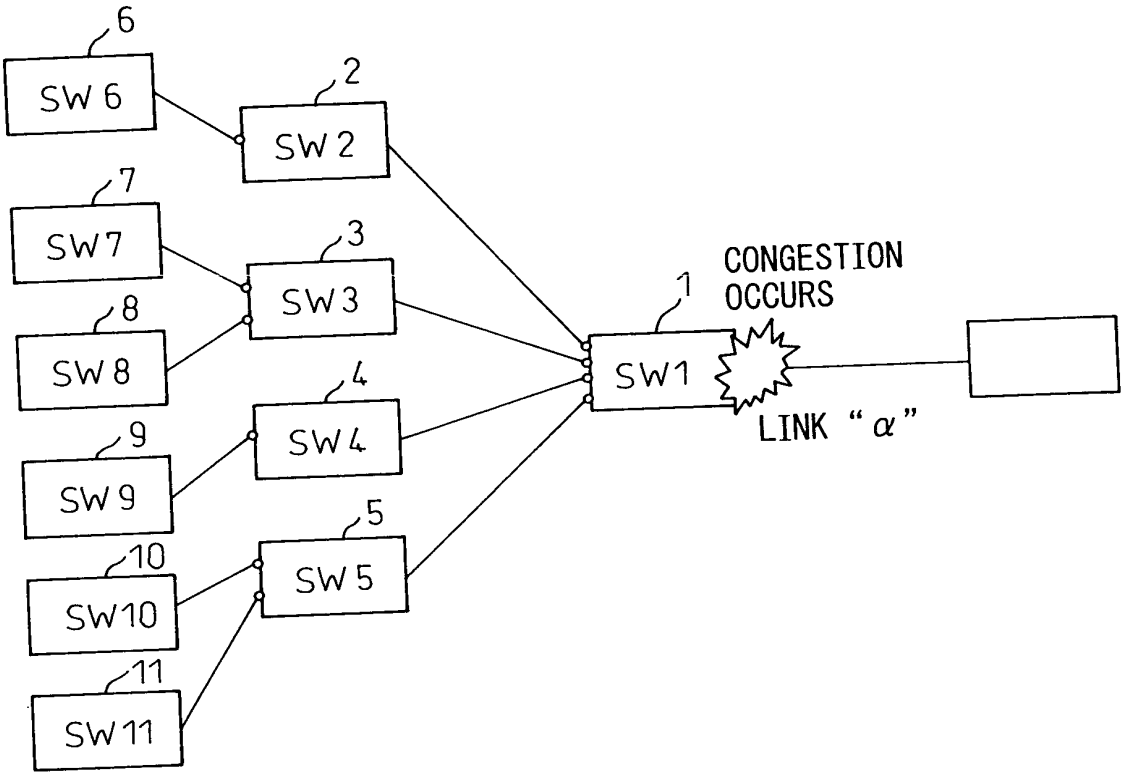

6
SW 6
2
SW 2
7
SW 7
3
SW 3
8
SW 8
4
SW 4
9
SW 9
5
SW 5
10
SW10
11
SW 11
1
SW 1
CONGESTION OCCURS
LINK "α"

Fig.4

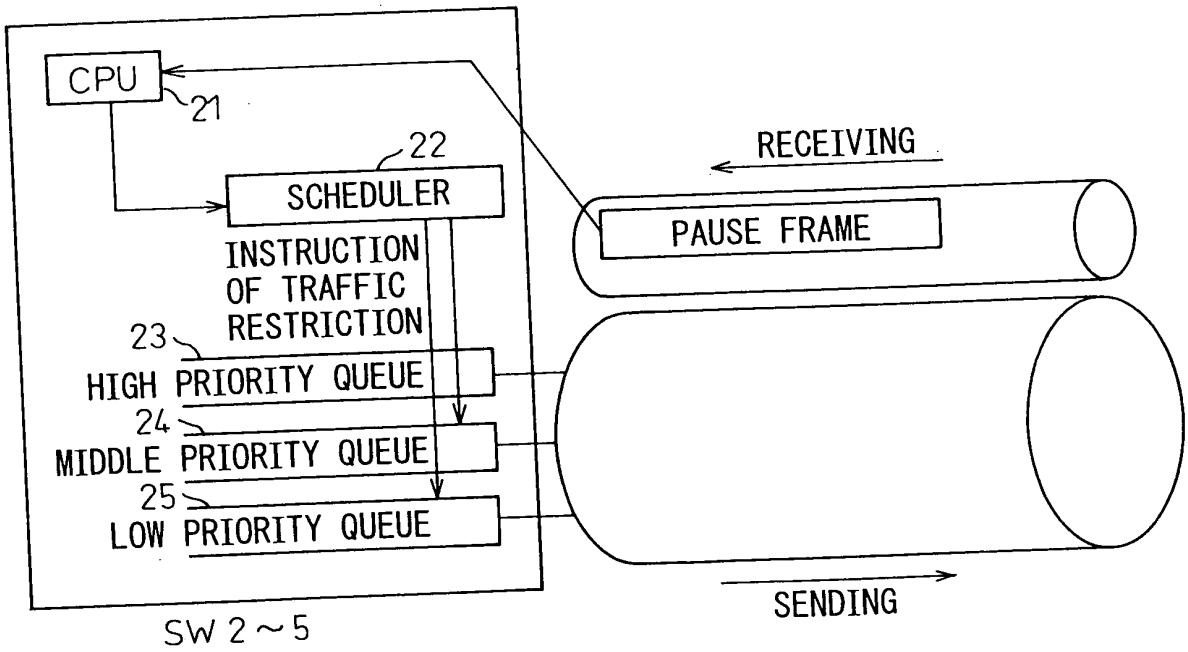

CPU
21
22
SCHEDULER
INSTRUCTION OF TRAFFIC RESTRICTION
23
HIGH PRIORITY QUEUE
24
MIDDLE PRIORITY QUEUE
25
LOW PRIORITY QUEUE
SW 2~5
RECEIVING
PAUSE FRAME
SENDING

Fig.5

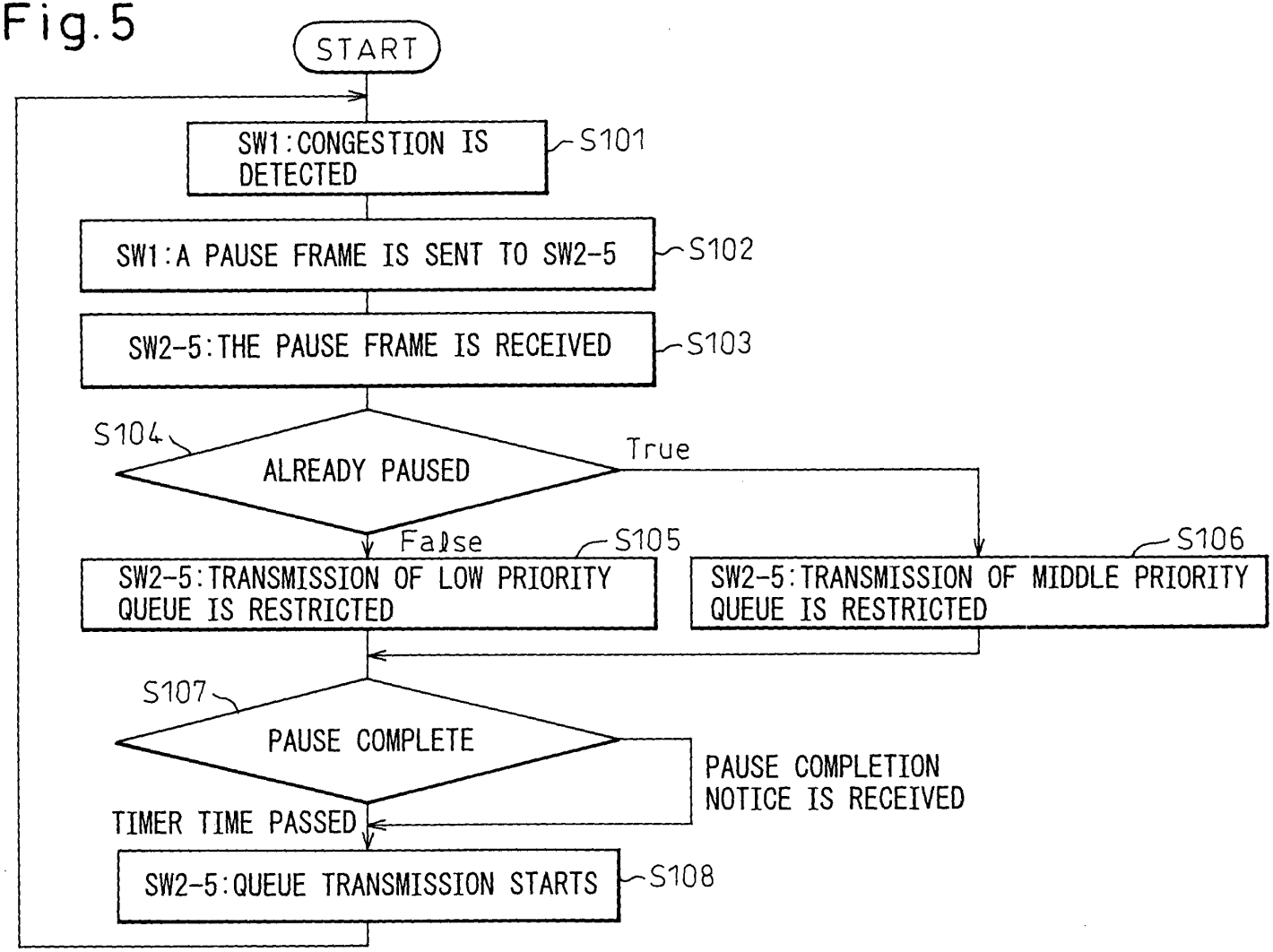

START
SW1:CONGESTION IS DETECTED
S101
SW1:A PAUSE FRAME IS SENT TO SW2-5
S102
SW2-5:THE PAUSE FRAME IS RECEIVED
S103
S104
ALREADY PAUSED
True
False
S105
SW2-5:TRANSMISSION OF LOW PRIORITY QUEUE IS RESTRICTED
S106
SW2-5:TRANSMISSION OF MIDDLE PRIORITY QUEUE IS RESTRICTED
S107
PAUSE COMPLETE
PAUSE COMPLETION NOTICE IS RECEIVED
TIMER TIME PASSED
SW2-5:QUEUE TRANSMISSION STARTS
S108

Fig.6

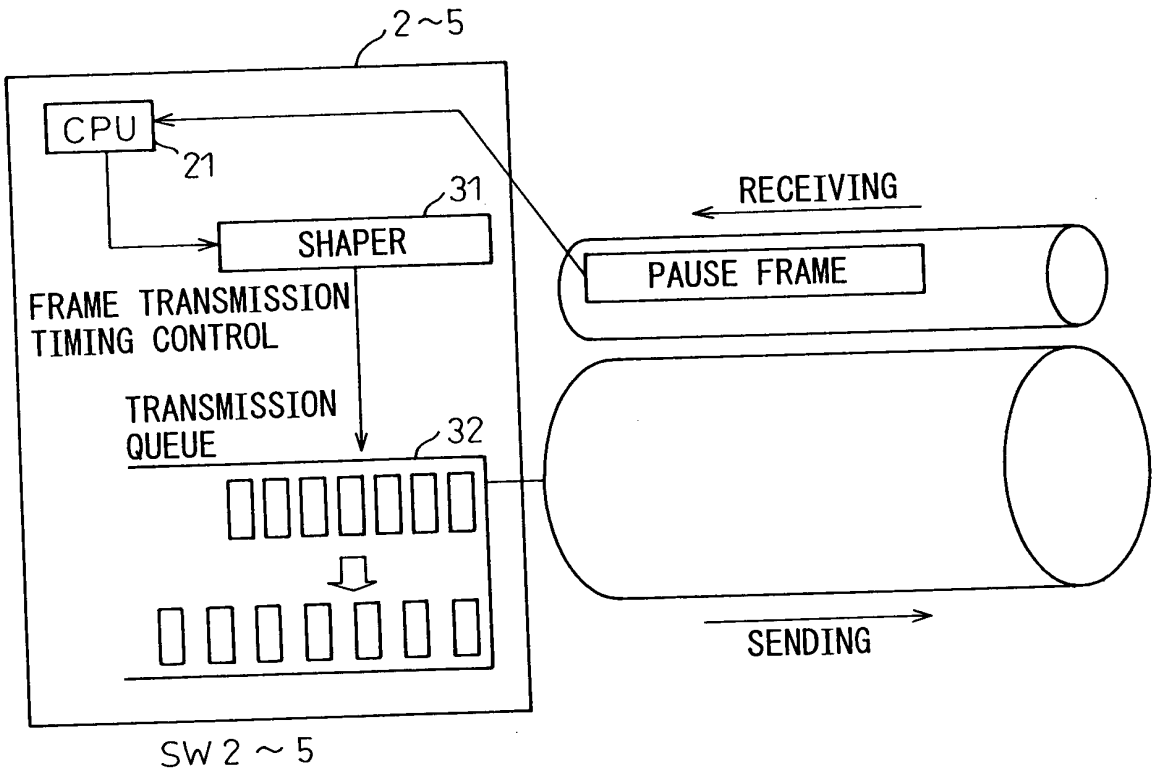

2~5
CPU
21
31
SHAPER
FRAME TRANSMISSION
TIMING CONTROL
TRANSMISSION
QUEUE
32
RECEIVING
PAUSE FRAME
SENDING
SW 2 ~ 5

Fig.7

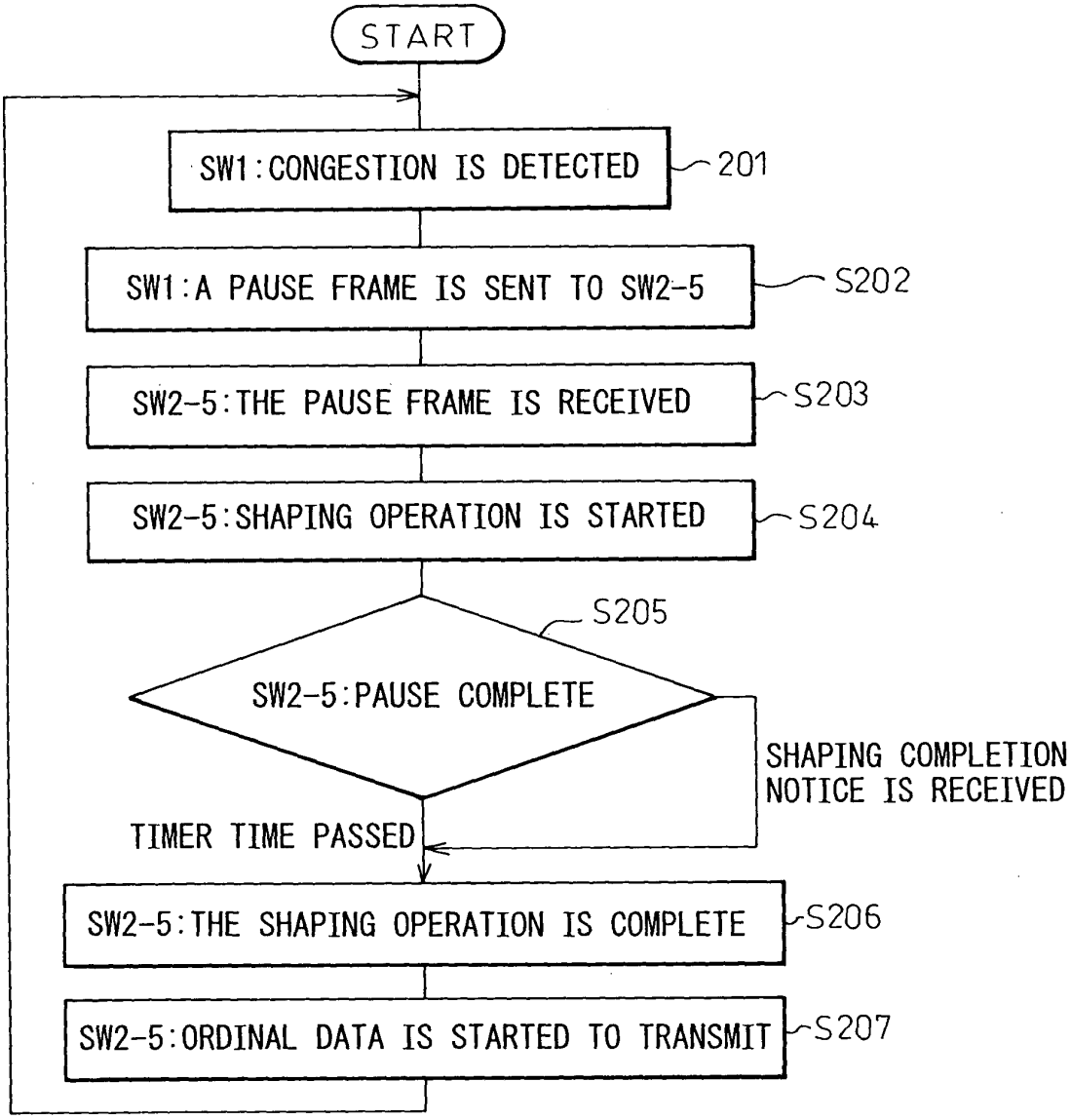

START
SW1:CONGESTION IS DETECTED
201
SW1:A PAUSE FRAME IS SENT TO SW2-5
S202
SW2-5:THE PAUSE FRAME IS RECEIVED
S203
SW2-5:SHAPING OPERATION IS STARTED
S204
S205
SW2-5:PAUSE COMPLETE
SHAPING COMPLETION NOTICE IS RECEIVED
TIMER TIME PASSED
SW2-5:THE SHAPING OPERATION IS COMPLETE
S206
SW2-5:ORDINAL DATA IS STARTED TO TRANSMIT
S207

Fig.8

SYSTEM I ; GAP IS CALCULATED BASED ON A FRAME LENGTH

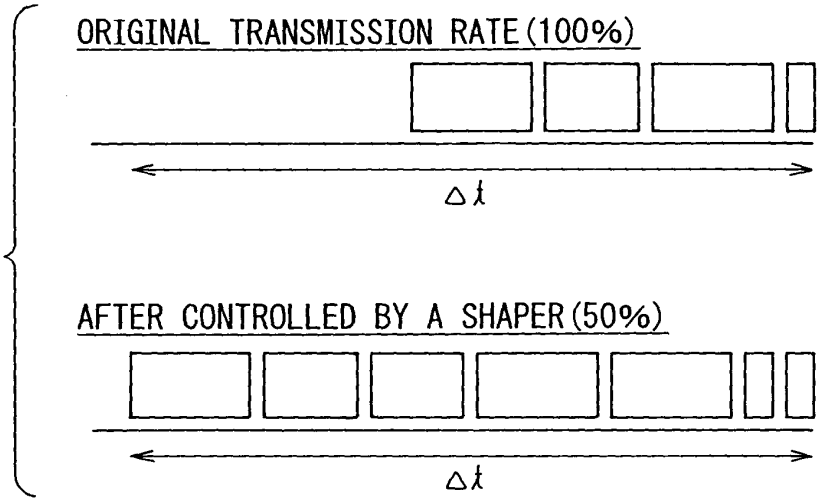


Fig.9

SYSTEM II ; GAP GENERATION IN Δt TIME

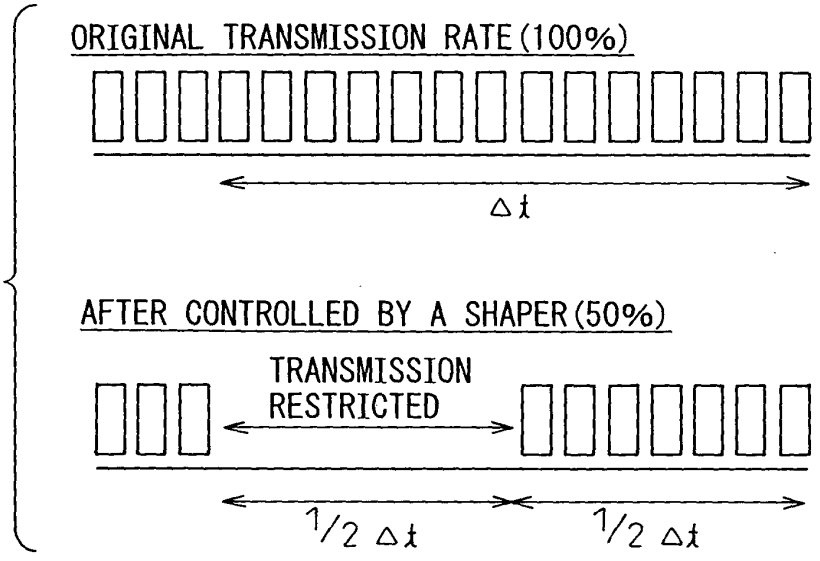


Fig.10

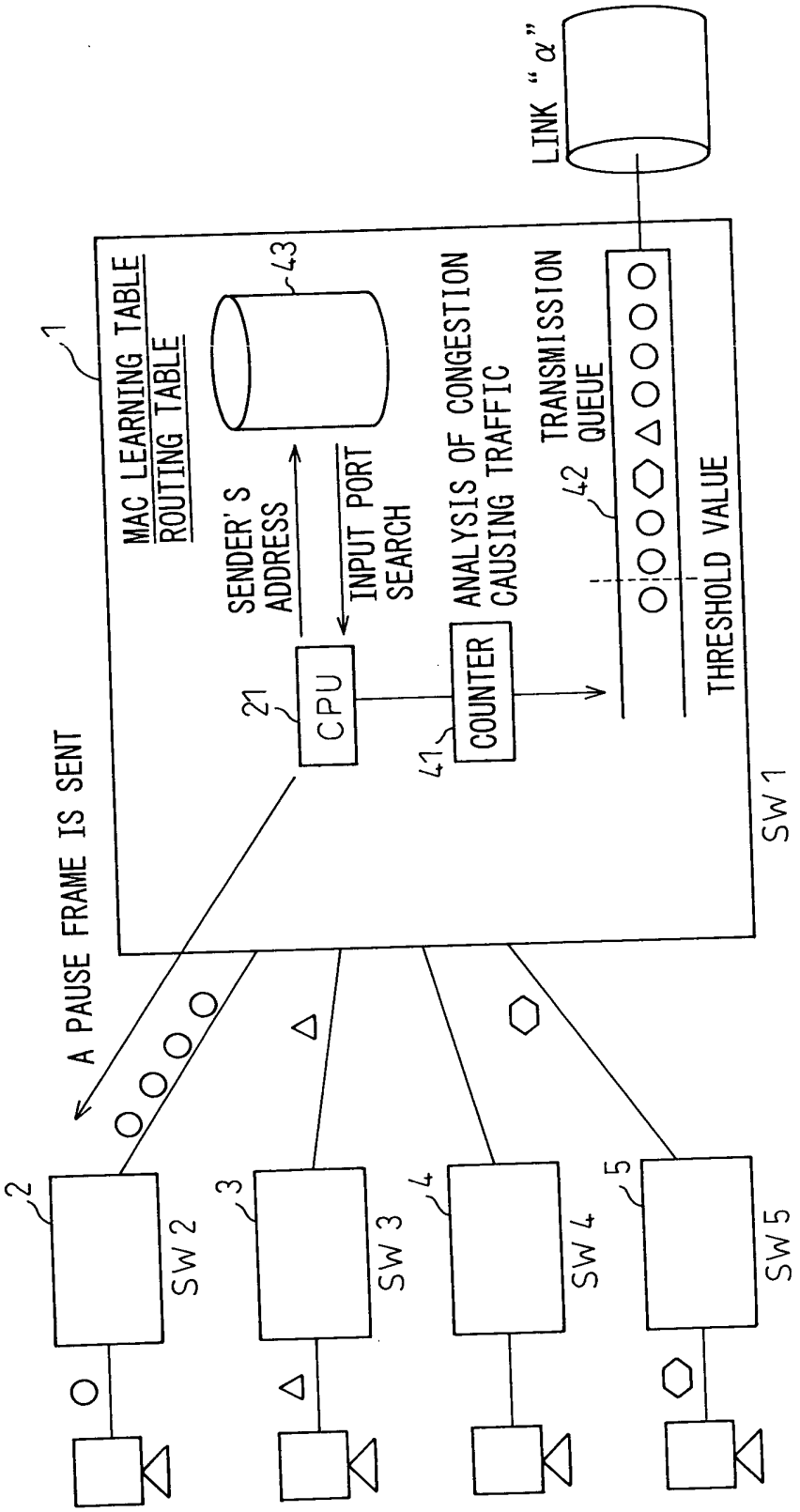

LINK "α"
1
MAC LEARNING TABLE
ROUTING TABLE
43
SENDER'S ADDRESS
INPUT PORT SEARCH
ANALYSIS OF CONGESTION CAUSING TRAFFIC
TRANSMISSION QUEUE
42
21
CPU
41
COUNTER
THRESHOLD VALUE
SW 1
A PAUSE FRAME IS SENT
2
SW 2
3
SW 3
4
SW 4
5
SW 5

Fig.11

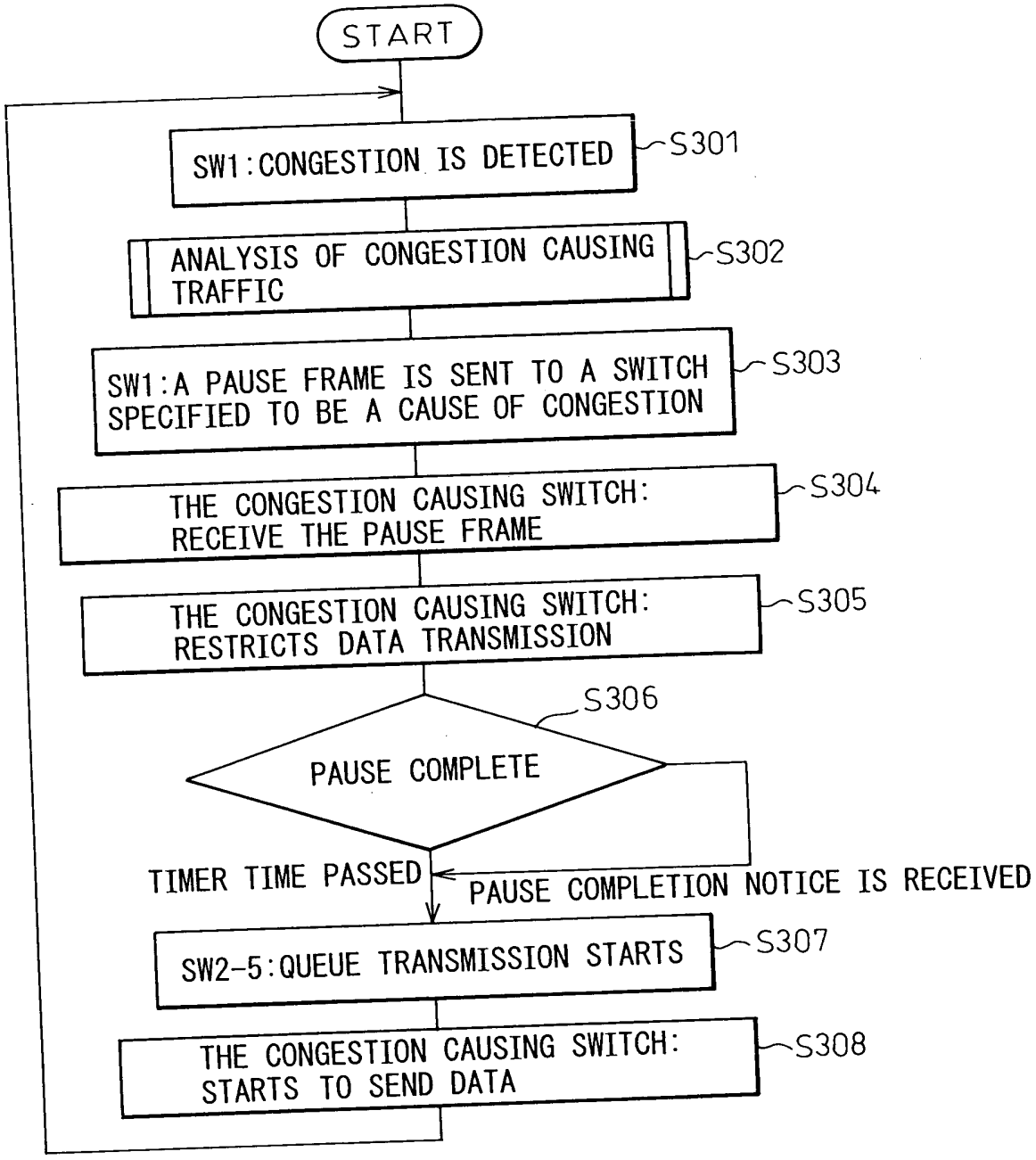
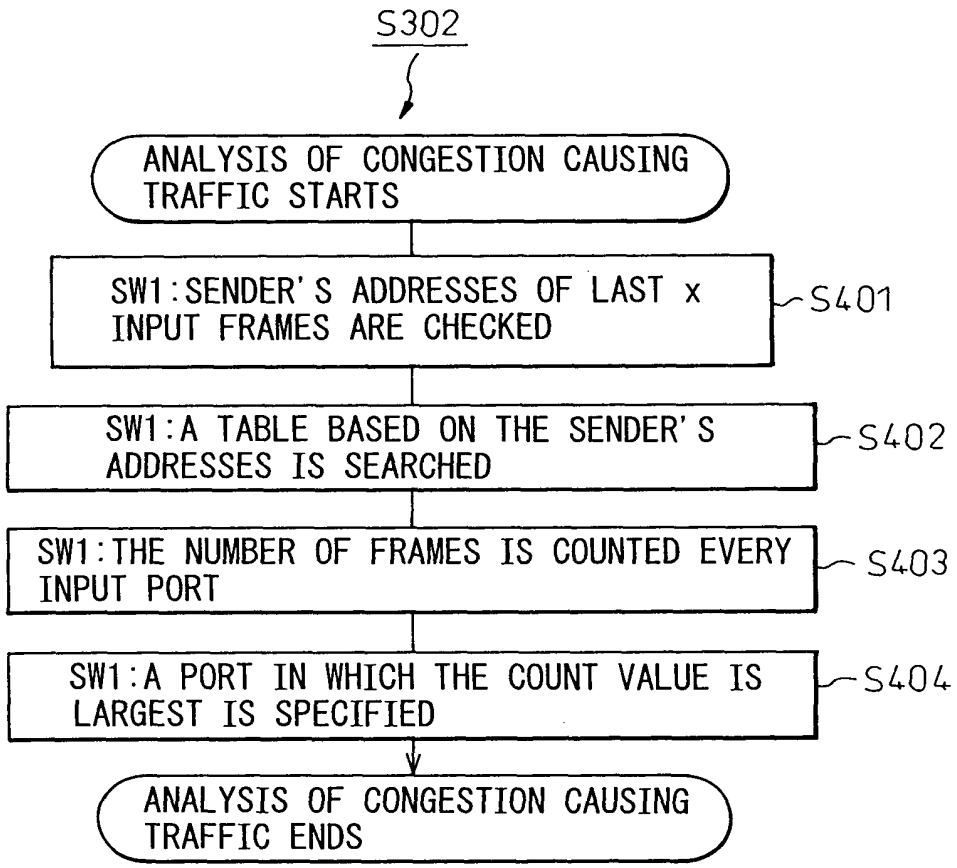

START
SW1:CONGESTION IS DETECTED
S301
ANALYSIS OF CONGESTION CAUSING TRAFFIC
S302
SW1:A PAUSE FRAME IS SENT TO A SWITCH SPECIFIED TO BE A CAUSE OF CONGESTION
S303
THE CONGESTION CAUSING SWITCH: RECEIVE THE PAUSE FRAME
S304
THE CONGESTION CAUSING SWITCH: RESTRICTS DATA TRANSMISSION
S305
S306
PAUSE COMPLETE
TIMER TIME PASSED
PAUSE COMPLETION NOTICE IS RECEIVED
SW2-5:QUEUE TRANSMISSION STARTS
S307
THE CONGESTION CAUSING SWITCH: STARTS TO SEND DATA
S308

Fig.12


S302
ANALYSIS OF CONGESTION CAUSING TRAFFIC STARTS
SW1:SENDER'S ADDRESSES OF LAST x INPUT FRAMES ARE CHECKED
S401
SW1:A TABLE BASED ON THE SENDER'S ADDRESSES IS SEARCHED
S402
SW1:THE NUMBER OF FRAMES IS COUNTED EVERY INPUT PORT
S403
SW1:A PORT IN WHICH THE COUNT VALUE IS LARGEST IS SPECIFIED
S404
ANALYSIS OF CONGESTION CAUSING TRAFFIC ENDS

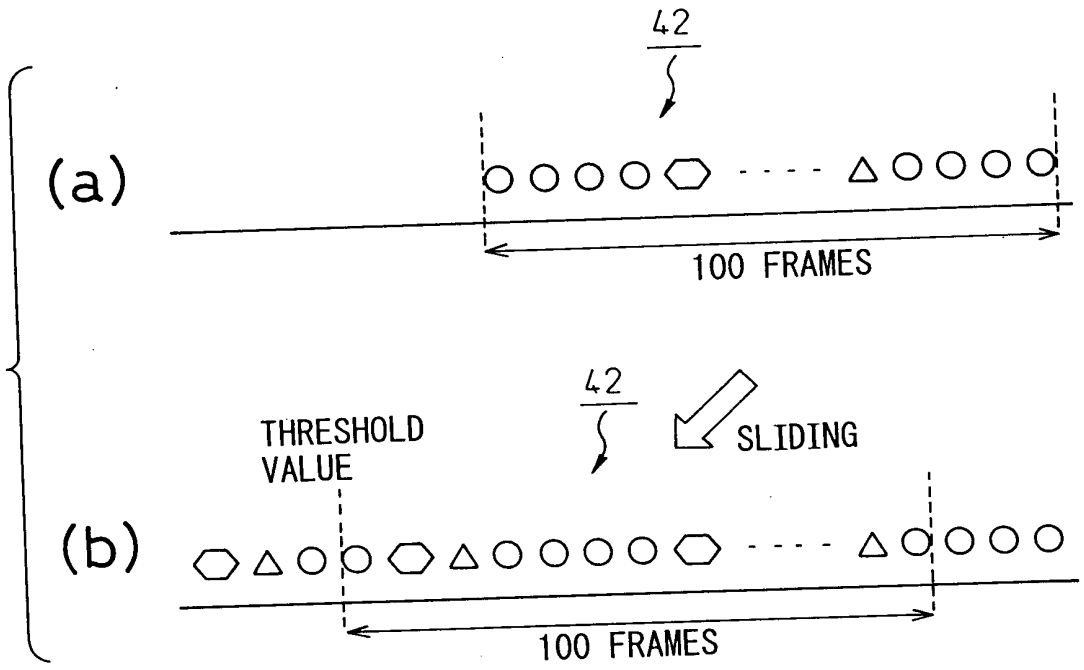



Fig.13